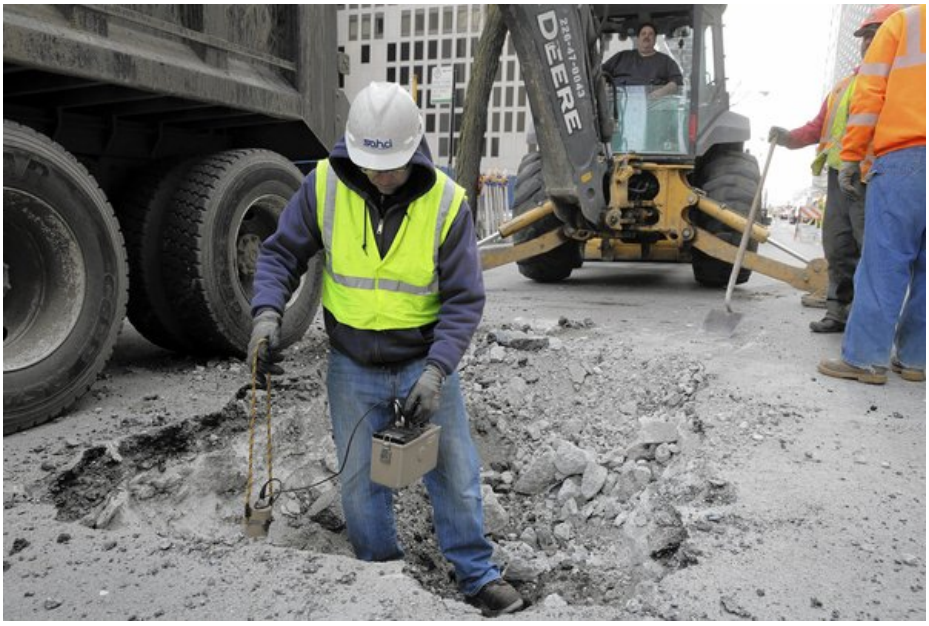
Gaslight era left radioactive legacy in Chicago



Consultant Glenn Huber tests soil for radioactivity Wednesday in the 400 block of East Ontario Street as a city of Chicago crew prepares to fix a water main. (Michael Tercha, Chicago Tribune / April 15, 2014)

By Michael Hawthorne, Tribune reporter
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Before the electric light bulb ended the Gaslight Era, one of the biggest advances in illuminating Chicago and other cities was the development of a lantern wick that could withstand intense heat while burning brighter than ordinary lamps.

The wicks, known as Welsbach gas mantles, were made of gauze soaked in a radioactive element called thorium. To meet demand, several long-forgotten lantern factories north of the Chicago River ground tons of thorium-laced

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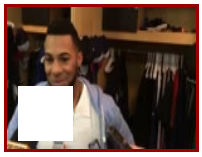
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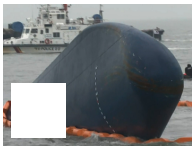
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ore during the early 1900s, then gave away the sandy leftovers to shore up soggy areas around Streeterville, at the time a heavily industrialized neighborhood.

Nobody kept track of where the radioactive sand from Lindsay Light Co. ended up. But today, developers and street crews confront the company's toxic legacy every time they dig foundations for hotels and high-rise condominiums that have made Streeterville a magnet for upscale living and tourism.

Experts say the radiation doesn't pose dangers as long as contaminated soil remains below newer layers of concrete, asphalt and dirt that cover most of the neighborhood. Environmental regulators start to worry only when old buildings, parking lots and parks are dug up for new development — work that is on the increase again after the economic downturn.

Inhaling thorium-contaminated dust increases the risk of developing lung and pancreatic cancer, according to the U.S. Environmental Protection Agency. Even small amounts can deposit in bones and stay in the body for years.

During the past decade, developers and regulators have quietly assembled a map of parcels where more than 50,000 cubic yards of thorium-contaminated soil have been excavated and shipped away to a Utah landfill licensed to handle radioactive waste. They assume more remains to be discovered.

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"It's hard to imagine today that our little neighborhood was one of the busiest ports in the world during the 1890s," said Gail Spreen, a real estate agent who heads the Streeterville Organization of Active Residents. "We had all kinds of factories back then. Sometimes that past comes back to haunt us."

The ongoing cleanup is getting a financial boost from a $5.1 billion legal settlement the Justice Department brokered this month with a multinational corporation that assumed Lindsay Light's liabilities. The nation's biggest settlement for environmental contamination includes $121 million that will be set aside for the city of Chicago and the EPA to address thorium hot spots in Streeterville and the Near East Side neighborhood on the other side of the river.

An additional $9 million will help complete the cleanup of contaminated sites in suburban West Chicago, where Lindsay Light moved in the 1930s and later contributed to the development of the first atomic bomb. The company continued to give away radioactive landfill to homebuilders and local governments, creating several hot spots of contamination that have taken decades to address.

The two Chicago-area sites are among dozens nationwide where toxic waste was dumped by companies associated with Kerr-McGee Corp., which took over the former Lindsay Light factories in the 1960s. Most of the settlement money will pay for cleaning up radioactive waste from uranium mining in the Navajo Nation, rocket fuel spilled into Lake Mead near Las Vegas and cancer-causing creosote from wood treatment factories in the Midwest, East and South.

Thorium remains a problem around old gas lantern factories throughout the country. Named for the Norse god of thunder, the radioactive element had no practical uses until the early

1890s, when an Austrian chemist named Carl Auer von Welsbach perfected a lantern mantle coated with a thorium-based solution. Welsbach gas mantles soon became standard equipment that helped the once-thriving gaslight industry survive into the early 1900s amid competition from the electric light bulb.

Starting at a factory at 22 W. Hubbard St., Lindsay Light used strong acids to extract thorium from monazite ore mined in Brazil, India and South Africa. The company later expanded to factories at 316 E. Illinois St. and 161 E. Grand Ave.

Like old lead smelters and other environmental problems from Chicago's industrial past, the radioactive waste spread around Streeterville was forgotten for decades. The EPA didn't get involved until 1993, when investigators involved in the West Chicago cleanup traced the history of Lindsay Light back to its origins in the city.

"U.S. EPA has taken action to ensure that people in Streeterville and West Chicago are protected from contaminants left behind by manufacturing facilities that closed their doors many years ago," said Susan Hedman, the agency's regional administrator.

EPA rules require special permits and radiation consultants for developers working in an area between Rush Street and Lake Michigan and Chicago Avenue and the Chicago River. The agency later extended its thorium testing area a few blocks south after discovering that contaminated sand had been used to help fill in boat slips on the south side of the river in what today is the Near East Side neighborhood.

Virtually every scoop of dirt from construction sites in those areas must be analyzed with a gamma ray detector. If anything turns up that exceeds an EPA safety limit, the contaminated soil must be taken away for safe disposal. The agency also required deed restrictions on several parcels.

Recent examples include a new Loews Hotel and residential tower under construction at 455 N. Park Drive and a residential high rise on Lake Shore Drive between Grand Avenue and Illinois Street, according to EPA records. Radiation detectors must even be used during street repairs, such as work that began Wednesday in the 400 block of East Ontario Street.

"We're only halfway through the redevelopment of the neighborhood," Spreen said. "They'll likely find more thorium along the way."

Money from the federal legal settlement ensures that taxpayers aren't stuck with the tab for testing and other work conducted by the EPA and city employees. For developers, cleaning up the radioactive leftovers is another price of doing business in ritzy neighborhoods, though some have negotiated separate compensation from Kerr-McGee.

The federal agreement came out of a Justice Department lawsuit involving Tronox, a subsidiary that Kerr-McGee spun off to focus on its valuable oil and gas assets. Tronox later declared bankruptcy and in December a U.S. bankruptcy judge ruled that Kerr-McGee had fraudulently conveyed assets to evade its massive environmental liabilities.

The companies now are owned by Anadarko Petroleum Corp., which agreed to pay for the cleanup of old Kerr-McGee sites as a way to resolve a long legal battle.

"Investor focus can now return to the tremendous value embedded in Anadarko's asset base," Al Walker, the company's president and CEO, said in a statement. "We are grateful to our stakeholders who have maintained their confidence and trust in our people and our assets."

Nearly $750 million has been spent cleaning up radioactive contamination in West Chicago. Earlier legal settlements with Kerr-McGee helped fund much of that work.

Before modern environmental laws took effect, thorium-contaminated sand from the company's former Rare Earths Facility was offered free for years to anybody looking for construction landfill. Radioactive dust also washed into Kress Creek when it rained and flowed

downstream into the West Branch of the DuPage River, collecting in slow-moving waters that run through McDowell Grove.

The contamination first became an issue in 1976, when an unnamed tipster alerted the local newspaper to radioactive waste buried in a West Chicago park.

Under pressure from the EPA to clean up the area, Kerr-McGee pushed to store thorium-contaminated waste in a clay-covered tomb that locals dubbed Mount Thorium. After a long legal and political fight, the company agreed to haul the radioactive waste away in 1991.

One vacant residential property still needs to be cleaned up, said Michael Guttman, the West Chicago city administrator. Other remaining work depends on congressional approval of cleanup funding for the Energy Department, which contracted with Kerr-McGee for nuclear research.

"Most people think the thorium will keep popping up from time to time," said Richard Kassinits, a West Chicago resident who helped organize opposition to Kerr-McGee's plans to store its thorium waste in the city. "But our town would have died a long time ago if we had allowed them to turn it into a nuclear waste dump."

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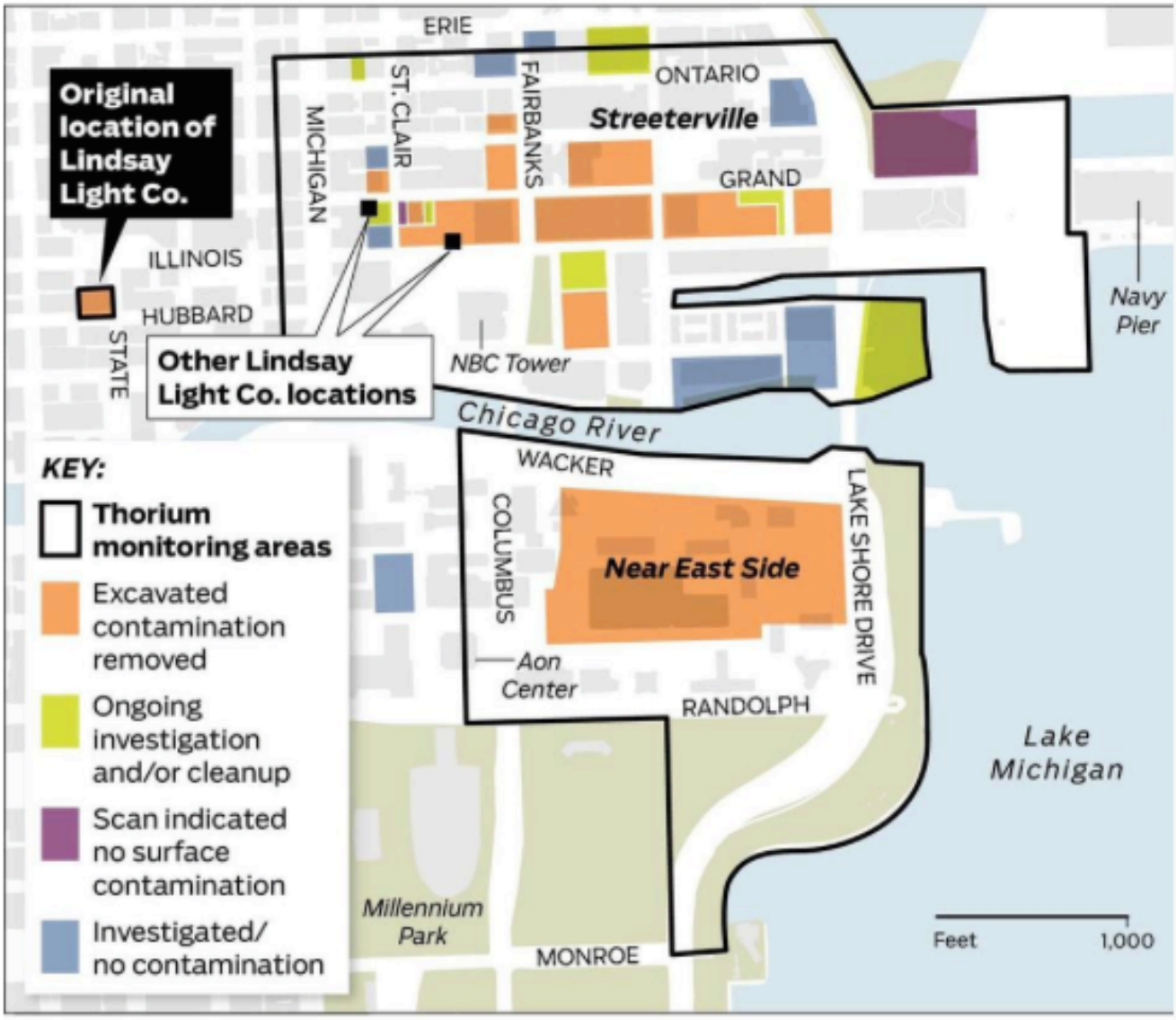
Map: Thorium monitoring areas in Chicago's Streeterville and East Lakeside neighborhoods

How a radioactive element got to Streeterville

In the early 1900s, Lindsay Light Co. ground tons of ore laced with radioactive thorium to make gas lantern mantles. Some areas of the Streeterville and Near East Side neighborhoods were filled with sandy waste from the manufacturing process. Now, part of a $5.1 billion settlement has been set aside for the city and the U.S. Environmental Protection Agency to address thorium hot spots.



What is thorium?

Thorium is a soft, silvery white metal that has been used predominantly to make gas lantern mantles. It also has been added to welding rods, used to make alloys for the aerospace industry and been studied as an alternative fuel for nuclear reactors.

Where is it found?

Trace amounts are found in virtually all rocks, soil, water, plants and animals. Large deposits are mined, and some versions are created in laboratories.

How long does it last?

Thorium-232, the most stable isotope, has a half-life of 14 billion years. Others last from less than two years to 75,000 years.

Is it harmful?

Prolonged exposure can increase the risk of lung, pancreatic and bone cancer.

SOURCES: Environmental Protection Agency, Thomas Jefferson National Accelerator Facility

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